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by Murray Weidenbaum

Fads and fashions are not limited to the retail sector of the economy. In recent years, many analysts have bemoaned the heavy burden of military expenditures borne by the American economy. In contrast, more recent events have generated a growing feeling that a generous peace dividend could finance all sorts of "unmet" social needs. Some perspective is very much needed in order to contain any impending shift from gloom to euphoria.

Back in 1987, Paul Kennedy of Yale warned that too large a proportion of a nation's resources allocated to military purposes likely would lead to "a weakening of national power over the longer run."[1] Former Senator J. William Fulbright seemed to believe that the United States had already attained that sad state. In early 1989, he wrote that the United States had "become a militarized economy."[2] By December 1989, Professor Seymour Melman of Columbia University was renewing his perennial plea to convert a military establishment that was the reason the United States is "no longer a first-class industrial economy . . ."[3]

This paper examines the changing role of defense in the American economy in an effort to shed some light on the emerging debate on "peace dividends," "conversion," etc. On the basis of a variety of economic and statistical analyses, I arrive at a more modest and very different set of conclusions. First of all, the military burden, although significant, has been far from overwhelming. In fact, the trend has been downward for decades. Secondly,

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the reductions now contemplated would be merely an acceleration of that negative sloping trend line. Surely, economic adjustments to the contemplated changes in defense spending are likely to be modest -- both in terms of dislocation to be suffered and opportunity to redirect the nation's resources.

In order to increase the factual foundation of the emerging debate, let us begin by measuring changes in the size of the defense sector and its use of key national resources. Let us also address several related points: What is the opportunity cost of defense spending? How much defense can we afford? How much do we need to assure national prosperity? Can we afford to cut more? The paper concludes with some observations on the relationship between defense spending and the national security.

Measuring the Defense Sector[4]

There is no generally agreed upon method of measuring the burden of military spending on the economy, in part because many of the items purchased by the military establishment are so different from the typical civilian marketbasket. Supersonic fighter aircraft, nuclear powered submarines, aircraft carriers, and ICBMs have few commercial counterparts. We do know that today's large defense sector has consumed many times the resources of the U.S. military effort in World War II, although at a much slower pace.

In absolute terms, the outlays of the Defense Department are huge, totaling $293 billion in the fiscal year 1989. That sum exceeds the combined sales of General Motors, Exxon, and IBM. The DOD budget is greater than the Gross National Product of Australia or India or the Netherlands. The defense sector of the GNP is of generally comparable magnitude to the military budget and fluctuates along a very similar trend line. Aside from some timing adjustments, the entry in the national income accounts is a bit smaller because it excludes transfer payments to military retirees and purchases of land and other existing assets.

The most widely used measure of the military role in the economy is the ratio of defense spending to GNP. For the United States, that ratio is now approximately 6 percent. Depending on the analyst's policy preference, it can be shown that the ratio is up or down from some earlier base. For example, defense spending now is a larger fraction of GNP than it was during the Carter Administration when it reached a low of 4.8 percent. The ratio today, however, is much lower than during the Kennedy period, when it attained a peak of over 9 percent.

In any event, U.S. defense spending has been expanding in absolute size over the past century. From about $1 billion in 1938, the outlays of the Department of Defense rose to $293 billion in the fiscal year 1989, or at a compound annual growth rate of 12 percent. That was a far more rapid increase than occurred in the population of the country (1 percent) and the rate of inflation (5 percent for the GNP deflator). Because the overall economy was expanding during the same period, it is more helpful to focus on the changing relative position of military outlays -- especially for the postwar period.

The most revealing fact that emerges from the historical record is that the relative importance of defense to the American economy has followed a declining trend line since the end of World War II, when defense spending reached a record peak of 39 percent of GNP. To be sure, the pattern since then has been uneven. But each peak since has been progressively lower -- the Korean War, 14 percent; the Vietnam War, 10 percent; the Reagan buildup, 6-1/2 percent.

The same generally downward trend is visible when we compare each successive interwar period. Thus, in the years following World War II and before the Korean conflict, defense spending peaked at 10 percent of GNP. Following the Korean War and before the Vietnam War, the ratio reached a high of 9 percent. After the Vietnam conflict and before the Reagan buildup, the ratio of defense to GNP peaked at 7 percent. Likewise, each successive valley was lower than the previous one.

Very recently, a combination of domestic fiscal pressures and international political developments has accentuated this downward pattern. The point being made here is that the current budget-cutting mood is not an abrupt change but merely an intensification of an ongoing trend.

A generally negatively sloping trend is also evident when we compare the military's use of key resources. The Department of Defense's share of the nation's labor force (1.3 percent) in the fiscal year 1989 was lower than it was in any other year since World War II.

The trend of the military share of research and development is also negatively sloping over the same period, despite a modest upturn in the 1980s. The current ratio of 30 percent is less than half of the 1960 figure of 62 percent. A strategic but overlooked development occurred in the 1980s. The private sector replaced the public sector as the primary source of sponsorship and funding of the nation's R & D.

Likewise, the military share of the federal budget is down very substantially -- from almost 70 percent in the early 1950s to less than 26 percent today. This contradicts the notion that "half of all federal tax dollars go to the Pentagon."[5]

If, to use Senator Fulbright's dramatic term, the United States has become a militarized economy, it appears that the worst is behind us. The civilian influences are not only greater, but they are rising more rapidly. If we refer to Paul Kennedy's truism that allocating too large a proportion of our resources to defense weakens national power, perhaps that allocation has not been "too large." In any event, the current outlook is for that allocation to continue to shrink.

The Opportunity Cost of Defense

Whatever their specific size, the resources allocated to national defense are not available for civilian purposes. In an economy close to effective full employment, it is reasonable to assume that, in the absence of the military's demand, much of those resources would have gone to meet civilian needs. The question then arises as to which

areas of the civilian economy have yielded those resources -- and, also which areas of the economy likely would be able to claim those resources following a reduction in military budgets. That is, what is the "opportunity cost" of defense spending, viewed in terms of foregoing the opportunity to use the people, machinery, and materials in some other ways?

Economists have been considering for some time whether or not increases in defense spending come primarily out of resources that otherwise would be devoted to investment and, hence, would contribute to economic growth far more directly. To the extent that such is the case, the opportunity cost of defense spending is higher than if the money would otherwise go for current consumption -- for items that generate little or no future benefit (although the importance of consumption as the end product of economic activity should not be ignored).

The likelihood that defense demands substantially crowd out private investment rests in good measure on the notion that a large and growing federal deficit forces the Treasury to expand its presence in capital markets. This puts upward pressure on interest rates. Rising interest rates, in turn, inhibit private capital formation. Intuitively, it would seem that the expanding deficits that so often accompany a military buildup are a factor in rising interest rates. However, the empirical evidence on the causal relationship between budget deficits and interest rates is not very impressive.[6]

As would be expected, during World War II, when the U.S. economy was pushing very hard against the limits of productive capacity, the rapid expansion of military demand had a strong negative effect on investment. But studies of broader and more recent time periods come up with very different results.

Hollenhorst and Ault examined the period 1939 to 1968. They concluded that during peacetime years as well as during the Korean War the only sector of the economy significantly affected by defense was non-residential construction; the relationship was positive.[7] When we consider that the great bulk of military equipment is produced in privately-constructed facilities, that result is not too surprising. The military accelerator

was at work; the expansion in the demand for weapons production increased the need for new factories and equipment to produce them.

In analyzing the period 1959-68, Bruce Russett found that much of the increase in defense spending came out of consumption. Yet, he also showed that a significant portion displaced business investment. In reporting on data for 1939-68, he sharpened his conclusion: ". . . in general, the American experience has been that the consumer pays most. Guns do come at the expense of butter."[8]

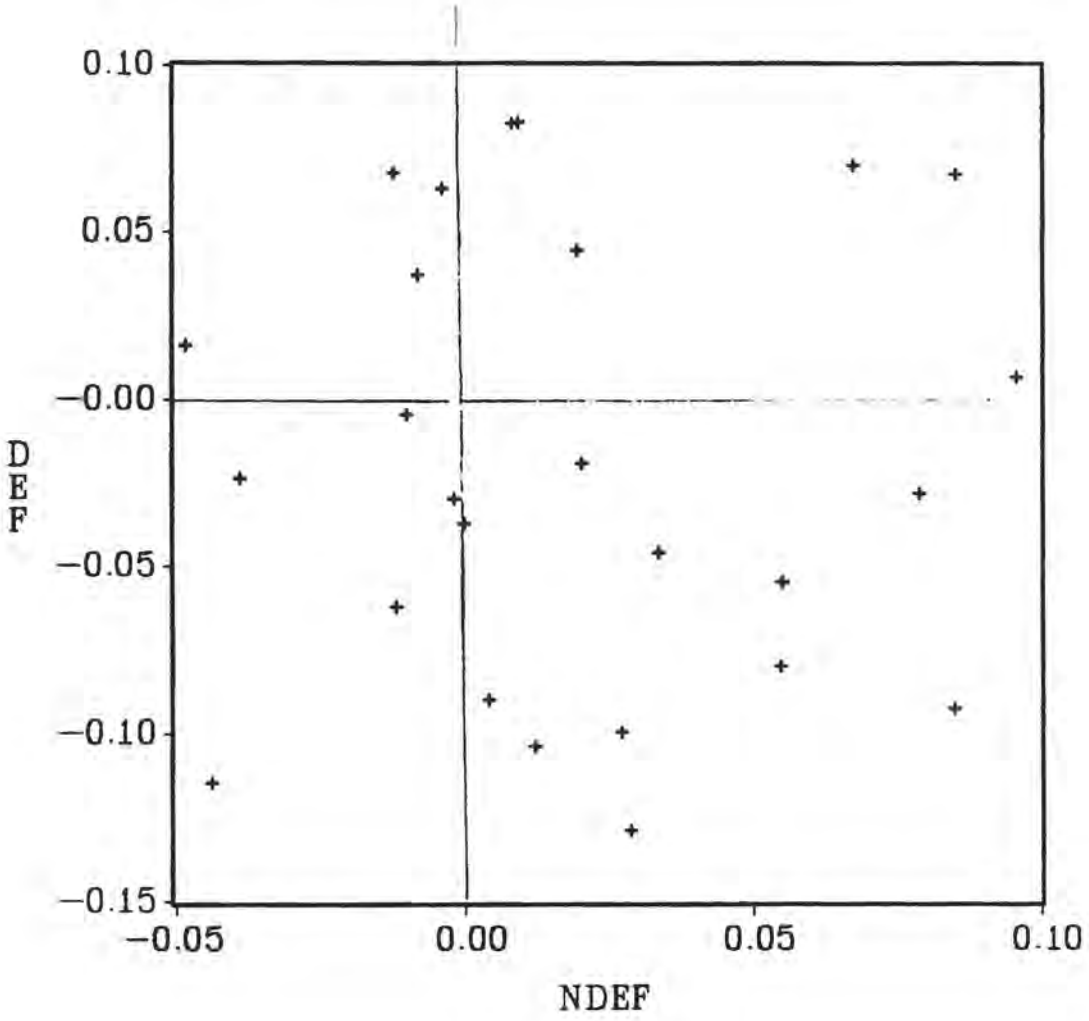
Extending Russett's methodology through 1988, his earlier conclusion seems to be the more appropriate one. We found that consumption continues to bear the burden of changes in defense expenditures (37 percent of the total), followed closely, however, by fixed investment (31 percent).

Kenneth Boulding also studied the opportunity cost of defense for the years 1929 to 1969. He showed that, in most cases, increases in the share of GNP devoted to defense were accompanied by major reductions in the proportion going to consumption.[9] This conclusion continued to hold when we extended his analysis to cover the years through 1988. More recently, Aschauer's study of the impact of aggregate government spending reported a very substantial substitution for private consumer expenditure, especially on nondurables and services.[10] I suggest that the substantial rise in personal income and employment tax collections in the period since World War II helps to explain shifts from consumption outlays to government purchases.

A related aspect of the opportunity cost debate is the widespread belief that military spending on research and development "crowds out" civilian R & D.[11] The available data do not support this view. Over the last three decades and more, changes in military R & D and in civilian R & D outlays are just as likely to be in the same direction as in opposite directions. A "scatter diagram" (see Figure 1) does not show an inverse relationship between movements in military and civilian R & D.

Figure 1

Relation Between Military and Civilian R & D Outlays, 1955-1988



Source: Computed from National Science Foundation data.

The same conclusion is reached for the 39 years between 1949 and 1988, the period for which detailed budgetary data are available on the shares of the federal budget devoted to civilian R & D and to military R & D. The respective shares moved in the same direction during 18 of those years and in opposite directions during 16. During five other years, the civilian R & D sector registered no change in its portion of the federal budget.[12]

There are several possible reasons for these results. Trends in both military and civilian R & D may be influenced by a common set of factors, such as changes in society's general desire to promote science and technology. Secondly, nondefense and defense engineers and scientists are not perfect substitutes. Specialization is great and interdisciplinary mobility is low. Thirdly, the supply of scientists and engineers is not fixed. It responds to variations in job opportunities, migration, and pay. Defense demand for scientists and engineers often has stimulated increases in the output of educational institutions that produce people with those skills.[13]

In a broader way of looking at the question of economic impacts, Americans often have an ambivalent attitude toward the value of defense expenditures. We simultaneously view the military use of resources as a burden to the nation, and as a prop to whole industries and regions. I can cite from personal experience the frustration of dealing with members of Congress who, in public, advocate large reductions in military spending and the next day come to the White House in a frantic but private effort to "save" the weapon systems being produced in their districts.

Part of the problem is that what passes for benefit/cost analysis in the political sphere is usually done from a local rather than a national perspective. Try closing any unneeded defense base -- or reducing the numbers of aircraft or missiles being purchased. The overwhelmingly negative public reaction will quickly demonstrate the point that the political process gives the benefits to the locality far greater weight than the costs borne by the rest of the nation. This helps to explain why, at least in modern times, Congress has

not cancelled the production of a single weapon system, despite the volume of debate on military waste in committee hearings and in the *Congressional Record*.

At this point, let us turn to the policy-related questions of how much defense spending the American economy can afford or needs.

How Much Defense Can We Afford?

Most economists who have studied these matters have arrived at similar answers. Can we afford to spend more on defense if we need to? "Yes." Do we need to continue the current level of defense spending in order to maintain economic prosperity? "No." Some embellishment is in order, however.

These conclusions are a by-product of work that originated in the late 1950s and early 1960s on the economics of disarmament, when military spending was a much larger share of the U.S. GNP. For example, the Committee for Economic Development concluded in 1958 that the risk that defense spending of 15 percent or more of the GNP "will ruin the American way of life is slight indeed."[14]

In 1963, when military expenditures were running about 10 percent of GNP, Edward Mason wrote that "many foolish words are spoken or written on this subject . . . . It is said that if we increase this percentage significantly the United States will go bankrupt . . ." Mason noted that the effective limit to maintaining a high level of defense spending was political. He concluded that ". . . there is not much doubt that in the face of deepening emergency even higher expenditures would be accepted."[15]

As a practical matter, it seems that Mason is right. The pertinent question in current debates on defense spending is not the ability of the U.S. economy to produce defense goods and services, but the willingness of society to devote a substantial share of its resources to that purpose. As Herbert Stein has written more recently, rather than talking about being unable to afford a larger defense program, people should be saying that they prefer some other use of the national output, such as private consumption or investment.[16]

A recurring concern is that a military buildup may be inflationary. I am in the seemingly awkward position of having been on both sides of that debate. In early 1966, I sounded the alarm on the inflationary potential of the Vietnam buildup. Yet in 1981, I maintained that the Reagan buildup would not be inflationary.[17]

What did happen? Recent history shows that a rapid expansion in military demand can indeed generate strong inflationary pressures. U.S. participation in the Vietnam War furnished a cogent example of a rapid rise in military procurement simultaneous with an upsurge in inflation. On the other hand, rapid expansion of defense spending in the early 1980s was accompanied by a very substantial reduction in the rate of inflation.

The key difference between the two periods was in monetary policy. Responding to strong pressure from President Lyndon Johnson (the chairman of the Fed was summoned to "the ranch"), the Federal Reserve in 1965 began to accommodate the expansion of federal deficit spending. In contrast, in 1981 the Reagan Administration supported the Federal Reserve's efforts to slow down the growth in the money supply simultaneous with the military buildup taking place. The contrasting results of these two periods demonstrate once again that inflation is primarily a monetary phenomonen and that any link to a military buildup is indirect at best.

The same studies that show that the American economy can handle a much higher level of military spending also conclude that the growth and prosperity of the United States do not require the current high level of national security expenditure. The Presidential Committee on the Economic Impact of Defense and Disarmament, chaired by Gardner Ackley, reported in 1965 that, "Experience testifies to the ability of the American economy to adjust successfully to major reductions in defense expenditures."[18] The Ackley committee drew on the adjustment experiences following World War II and the Korean War. The post-Vietnam adjustment furnished another case in point.

In a variety of econometric simulations, Lawrence Klein and Kei Mori estimated that a short transition would occur after a large cutback in defense spending. Temporarily,

unemployment would rise and the economy's growth rate would slow down. Subsequently, however, the peacetime economy would follow a more rapid long run growth path.[19] More recent analyses by DRI have yielded basically similar conclusions concerning Secretary of Defense Dick Cheney's potential reduction of $180 billion in the defense budget over the next five years -- ". . . the national economy can cope with this transition without major problems."[20]

Indeed, that has been the experience in the recent past. Following an initial adjustment period -- with its attendant pain and uncertainty -- most localities tend to wind up with a stronger economy after the defense cut. A study of 100 former military bases reported that, during the period 1981-86, 128,000 new civilian jobs replaced the 93,000 military jobs at the time when the bases were still operating. This 7 percent average annual increase in employment at these sites during the period surveyed compares favorably to the average annual increase of 2 percent in employment nationally. Three-fourths of the closed bases became industrial and office parks. Most of the remainder house colleges and vocational technical schools.[21]

Thus, the generally accepted belief among economists -- a belief not as universally accepted by policymakers -- is that, given a reasonable period of adjustment and following policies familiar to most students of Economics 101, the American economy could attain prosperity with a defense establishment greatly reduced from the present level.

At a more microeconomic level, the occupations, industries and regions benefiting from the changes in sectoral demands likely would be different from those that participated most actively in the military buildup. On the basis of past experience, a geographic shift in income and employment could be expected to occur, from the aerospace and electronics companies on the West Coast and New England to the more conventional industries in the midwest.

Some Conclusions

There surely is no continuing correct share of GNP that should be allocated to defense. The ratio that exists at any time is the accidental result of the federal government responding to a variety of internal and external pressures. A high or even rapidly rising level of defense spending does not necessarily mean that a nation is becoming more secure. Likewise, attaining a share of GNP achieved during an earlier period is no measure of the adequacy of defense. The base period used for comparison may have been lower or higher than that required for sustaining a given level of military strength.

As we have been reminded so recently, an interdependence exists with the defense outlays of other countries, both antagonists and allies. A carefully constructed program of mutual arms reduction could well result in enhancing the sense of security of both the United States and the Soviet Union. Nor does increasing the efficiency with which we use military resources (getting more bang per buck) necessarily mean that the Pentagon's budget can be cut if a potential enemy is simultaneously increasing its military efficiency (achieving more rubble per ruble).

However, higher levels of defense expenditure may not equal expansion in military strength because some spending literally goes down the drain. Highly publicized cases of $600 toilet seats are exercises in cheap (but effective) politics rather than examples of costly procurement. After all, airlines pay as much for similar pieces of equipment.

Far more important are the billions of dollars that are spent for programs that subsequently are cancelled. Between 1957 and 1970, 81 military projects were terminated after a total of $12 billion had been spent on them. More recently, approximately $4 billion was expended on the development of the Sergeant York anti-aircraft gun before the Defense Department terminated the project.

To return to the point made at the outset of this paper: the defense program is a relatively minor player in the American economy -- accounting for one-fifteenth of the GNP and an even smaller proportion of the nation's work force. Moreover, the ongoing

debate on the proper future levels of defense spending should start off with the knowledge that the economic importance of defense in the United States has been declining for many years. Economic activity in the United States marches essentially to the beat of civilian drummers. The massive economy of the United States is neither propelled nor redirected by modest shifts in the relatively small share of GNP devoted to military purposes. Furthermore, its powers of adjustment are substantial.

Any consideration of the economic policy responses to further reductions in defense spending should take account of the fact that the ability of an economy to adjust to shifts in economic forces is greater in the long run than in the short run. The reaction of the American economy to the sharp run up in oil prices in the 1970s furnishes a good example. The initial responses -- both in the public and private sectors -- often bordered on panic. Fifteen years after the initial shock, the United States has adjusted fairly well to much higher levels of energy prices, in the process becoming a less energy-intensive society.

Similarly, the initial responses to cancellations of military programs can be painful to individual companies, their employees, and the surrounding communities. But, with the protection of a social safety net, resources will shift to civilian uses, although not necessarily in the same location. In the longer run, decisions by business firms, consumers, and investors can be expected to accommodate to the revised pattern of demand -- unless government has stepped in with a misguided effort to prevent change.

Moreover, the adjustments required by defense cutbacks are not basically differences from the responses that occur regularly from shifts in consumer demand or from technological changes which yield new products that eliminate markets for older products, or from changes in the pattern of foreign trade. As the Ackley committee noted, ". . . major readjustments in the use of resources do continually occur in a free economy and, on the whole, fairly successfully."[22]

Unfortunately, the enthusiasts for an ambitious federally-directed "conversion" effort overlook the sad experience of such undertakings in the past. When the major

defense contractors stick close to the products and markets they know, they tend to do well. Two notable examples are building civilian space systems for NASA and producing jet airline equipment for the commercial carriers.

But the diversification efforts of major defense contractors into other fields -- both in the public and private sectors -- have in the main been unsuccessful.[23] In a period of budget stringency, there is no compelling case for devoting public resources to force feeding such "conversion" efforts. Nor is it obvious why public policy should interfere with the voluntary shift of resources to other sectors of the economy. Indeed, a large reduction in defense spending -- and a concomitant reduction in federal deficit financing -- should be expected to be a welcome opportunity for increasing the extent to which consumers, producers, and investors make their own decisions on the use of their income and wealth.

In any event, for the range of likely disagreements about the future size and composition of the military budget, economic constraints are not likely to be particularly binding. It would be unfortunate if political pressures instituted such constraints, especially on the basis of misreading economic analysis. This is not a plea for adopting any particular level of military outlays. Rather, the amount of resources that the United States devotes to the defense establishment should be determined on political -- that is, essentially national security -- grounds, with due regard to the pressures of competition from other demands on the public purse.

Notes

1. Paul Kennedy, *The Rise and Fall of the Great Powers* (New York: Random House, 1987), p. xvi.

2. J. William Fulbright, *The Price of Empire* (New York: Pantheon Books, 1989), p. 136.

3. Seymour Melman, "What to Do With the Cold War Money," *The New York Times*, December 17, 1989, p. F-3.

4. This section draws on Murray Weidenbaum, *Military Spending and the Myth of Global Overstretch* (Washington, D.C.: Center for Strategic and International Studies, 1989).

5. Melman, "Cold War Money," p. F-3.

6. William Niskanen, "Uneasy Relations Between Budget and Trade Deficits," *Cato Journal*, Fall 1988, pp. 507-520.

7. Jerry Hollenhorst and Gary Ault, "An Alternative Answer to: Who Pays for Defense?", *American Political Science Review*, Vol. 65, No. 3, 1971, p. 761.

8. Bruce Russett, *What Price Vigilance?* (New Haven: Yale University Press, 1970), p. 140; Bruce Russett, "The Price of War," in Kenneth Boulding, ed., *Peace and the War Industry* (New Brunswick: Transaction Books, 1973), p. 149.

9. Kenneth Boulding, "The Impact of the Defense Industry on the Structure of the American Economy," in Bernard Udis, ed., *The Economic Consequences of Reduced Military Spending* (Lexington, Mass.: Lexington Books, 1973), p. 228.

10. David Aschauer, "Fiscal Policy and Aggregate Demand," *American Economic Review*, March 1985, pp. 117-127.

11. See, for example, Amitai Etzioni, "Federal Science An Economic Drag, Not Propellent," in Seymour Melman, ed., *The War Economy of the United States* (New York: St. Martin's Press, 1971), p. 132.

12. Weidenbaum, *Military Spending*, pp. 13-14.

13. Richard R. Nelson, "Impact of Disarmament on Research and Development," in Emile Benoit and Kenneth Boulding, eds., *Disarmament and the Economy* (New York: Harper and Row, 1963), p. 115. See also Lynn E. Browne, "Defense Spending and High Technology Development," *New England Economic Review*, September/October 1988, p. 5.

14. *The Problem of National Security* (New York: Committee for Economic Development, 1958), p. 27.

15. Edward S. Mason, "Economic Growth and United States Strategy," in David Abshire and Richard Allen, eds., *National Security*, (New York: Frederick Praeger, 1963), pp. 880-881.

16. Herbert Stein, "America's Second Fiscal Revolution," *Challenge*, July-August 1989, p. 6; see also Herbert Stein, *Governing the $5 Trillion Economy* (New York: Oxford University Press, 1989).

17. Michael R. Gordon, "If Defense Spending Is on the Rise, Can Inflation Be Very Far Behind?", *National Journal*, June 20, 1981, pp. 1101-1105; Murray L. Weidenbaum, *Economic Impact of the Vietnam War* (Washington, D.C.: Georgetown University, Center for Strategic Studies, 1967).

18. *Report of the Committee on the Economic Impact of Defense and Disarmament* (Washington, D.C.: U.S. Government Printing Office, 1965), p. 8.

19. Lawrence R. Klein and Kei Mori, "The Impact of Disarmament on Aggregate Economic Activity," in Udis, *Economic Consequences*, pp. 76-77.

20. "The Retreat of Defense Spending," *DRI U.S. Forecast Summary*, December 1989, p. 3.

21. The data do not include military personnel stationed at the bases. Office of the Assistant Secretary of Defense, Force Management and Personnel, *Summary of Complete Military Base Economic Adjustment Projects* (Washington, D.C.: U.S. Department of Defense, 1986), pp. 3-12.

22. *Committee on the Economic Impact of Defense*, p. 18.

23. See, for example, U.S. Arms Control and Disarmament Agency, *Defense Industry Diversification, an Analysis With 12 Case Studies* (Washington, D.C.: U.S. Government Printing Office, 1966).